No. 3

Boeing 737-200, HS-TBC, accident in the Andaman Sea near Phuket Airport, Thailand, on 31 August 1987. Report released by the Aircraft Accident Investigation Committee, Ministry of Transports and Communications, Thailand.

SYNOPSIS

A THAI AIRWAYS COMPANY AIRCRAFT, BOEING 737-200 OF THAI NATIONALITY AND REGISTRATION ,HS-TBC, FLIGHT NUMBER THAI AIR 365, ON A SCHEDULED DOMESTIC PASSENGER FLIGHT, CRASHED IN THE ANDAMAN SEA NEAR PHUKET AIRPORT ON AUGUST 31,1987. IT WAS A NON-SURVIVABLE ACCIDENT.

THE AIRCRAFT ACCIDENT INVESTIGATION COMMITTEE DETERMINES THAT THE PROBABLE CAUSE OF ACCIDENT WAS: THE PILOT SLOWED THE AIRCRAFT AND IT STALLED WHILE THE PILOT PREPARED TO BE NUMBER ONE ON LANDING AS ADVISED BY PHUKET APPROACH CONTROL. IT APPEARS THAT HE WAS WORRYING AND NOT SURE WHETHER HE COULD MAKE NUMBER ONE LANDING BECAUSE THE PILOT OF NUMBER TWO AIRCRAFT IN SEQUENCE GAVE WARNING THAT THE NUMBER ONE AIRCRAFT AHEAD WAS ABOVE HIM AND COULD NOT DESCEND PASSING THROUGH HIS LEVEL. THE PILOT ADDED POWER AND RAISED THE GEAR AFTER STICK SHAKER ACTIVATED BUT DID NOT EXECUTE A RECOVERY BEFORE HITTING THE SEA.

ALL TIMES IN THIS REPORT ARE UTC

1.1 HISTORY OF THE FLIGHT

ON AUGUST 31,1987, AT 05:15:00 HRS, DRAGON AIR 203, WITH EIGHT FLIGHT CREW MEMBERS AND FIFTY THREE PASSENGERS PLUS ONE INFANT ONBOARD, DEPARTED FROM THE HONGKONG INTERNATIONAL AIRPORT ON AN IFR FLIGHT TO THE PHUKET AIRPORT IN THAILAND VIA A 901 DANANG, A1 UBON, W1 BANGKOK, W 10 SURAT, W 18 PHUKET, AT FL 350. IT PROCEEDED VIA ITS FLIGHT PLANNED ROUTE AND WAS TRANSFERED TO THE BANGKOK AREA CONTROL CENTRE WHEN IT WAS OVER BUTRA, AT THE BANGKOK FLIGHT INFORMATION BOUNDARY.

AT 08:10:00 HRS, THAI AIR 365, WITH NINE FLIGHT CREW MEMBERS AND SEVENTY FOUR PASSENGERS ONBOARD, DEPARTED FROM HAT-YAI AIRPORT IN THAILAND ON AN IFR FLIGHT TO THE PHUKET AIRPORT VIA W14 , AT FL 180. SHORTLY AFTER AIRBORNE, THAI AIR 365 BEGAN TO CONTACT THE BANGKOK AREA CONTROL CENTRE WHEN IT WAS AT 13 NAUTICAL MILES FROM HAT-YAI VOR/DME, ON RADIAL 299 , AT ALTITUDE 11,000 FEET. IT WAS CLEARED TO CLIMB UP TO FL 180.

THE TWO AIRCRAFT WERE MAKING THE VOR/DME APPROACH TO LAND ON RUNWAY 27 AT PHUKET AIRPORT. BOTH WERE CONVERGING ON THE INITIAL APPROACH FIX, 12 NAUTICAL MILES FROM THE VOR/DME. THEY WERE THAI AIRWAYS COMPANY AIRCRAFT, HS-TBC, BOEING 737-200, FLIGHT NUMBER THAI AIR 365 ON SCHEDULED DOMESTIC PASSENGER FLIGHT AND DRAGON AIRLINES LTD. AIRCRAFT, VR-HYL, BOEING 737-200, FLIGHT NUMBER DRAGON AIR 203 ON A SCHEDULED INTERNATIONAL PASSENGER FLIGHT.

THE SEQUENCE OF EVENTS BELOW DERIVED FROM THE COCKPIT VOICE RECORDER OF THAI AIR 365 AND THE PHUKET APPROACH CONTROL RECORDED AIR TRAFFIC COMMUNICATION:

AT 08:10:00 HRS, DRAGON AIR 203 REQUESTED BANGKOK AREA CONTROL TO DEVIATE TO THE WEST OF ITS PRESENT ASSIGNED TRACK ON INBOUND RADIAL 038 IN ORDER TO AVOID THUNDERSTORM CLOUDS OVER SURATTANEE. BANGKOK AREA CONTROL APPROVED AND ASKED DRAGON AIR 203 TO ADVISE WHEN IT WAS CLEARED OUT OFF THUNDERSTORM CLOUDS AND TO INFORM THEM OF ITS INBOUND RADIAL TO PHUKET VOR/DME.

AT 08:15:00 HRS, DRAGON AIR 203 REPORTED TO BANGKOK AREA CONTROL THAT THE FLIGHT WAS AT FL 350 AND WOULD BE ABLE TO ESTABLISH

ITSELF ON THE RADIAL 025 INBOUND TO PHUKET VOR/DME, AND REQUESTED DESCENT CLEARANCE. BANGKOK AREA CONTROL THEN CLEARED DRAGON AIR 203 TO PHUKET VOR/DME ON THE INBOUND RADIAL 025 AND TO DESCEND AND MAINTAIN FL 190, DUE TO THE FAILURE OF DIRECT SPEECH CIRCUIT BETWEEN BANGKOK AREA CONTROL AND PHUKET APPROACH CONTROL, THEN

AT 08:17:00 HRS, BANGKOK AREA CONTROL REQUESTED DRAGON AIR 203 TO CONTACT PHUKET APPROACH CONTROL FOR THEM TO OBTAIN CLEARANCE FOR DRAGON AIR 203 TO PROCEED INBOUND ON RADIAL 025 TO PHUKET VOR/DME. PILOT OF DRAGON AIR 203 CARRIED OUT THE BANGKOK AREA CONTROL REQUEST AND REPORTED BACK TO BANGKOK AREA CONTROL THAT HE HAD BEEN ADVISED BY PHUKET APPROACH CONTROL THAT THERE WAS NO CONFLICTING TRAFFIC AT PHUKET.

AT 08:18:00 HRS, DRAGON AIR 203 REPORTED TO BANGKOK AREA CONTROL THAT IT WAS AT 82 NAUTICAL MILES FROM PHUKET VOR/DME AND IT WAS DESCENDING FROM FL 275. BANGKOK AREA CONTROL CLEARED DRAGON AIR 203 TO DESCEND TO FL 130 AND TO CROSS NORTH OF PHUKET AIRPORT 30 NAUTICAL MILES FROM PHUKET VOR/DME.

AT 08:19:00 HRS, THAI AIR 365 REPORTED REACHING FL 180 AND WAS CLEARED BY BANGKOK AREA CONTROL TO PHUKET VOR/DME ON RADIAL 119.

AT 08:20:00 HRS, THAI AIR 365 WAS AT 90 NAUTICAL MILES FROM PHUKET VOR/DME AND THE PILOT-IN-COMMAND BRIEFED HIS CO-PILOT CONCERNING THE PHUKET VOR/DME APPROACH PROCEDURES.

AT 08:23:00 HRS, BANGKOK AREA CONTROL CLEARED THAI AIR 365 TO DESCEND AND MAINTAIN FL 140.

AT 08:24:00 HRS, DRAGON AIR 203 REPORTED THAT IT WAS CLEARED OUT OFF THUNDERSTORM CLOUDS AND COULD REESTABLISH ON RADIAL 038 AGAIN. BANGKOK AREA CONTROL ASKED DRAGON AIR 203 TO CONFIRM ITS PRESENT RADIAL AND DRAGON AIR 203 CONFIRMED THAT IT WAS ON RADIAL 025 AND COULD REESTABLISH ON RADIAL 038 . BANGKOK AREA CONTROL THEN CLEARED DRAGON AIR 203 TO CONTINUE ON RADIAL 025 TO PHUKET VOR/DME.

AT 08:25:00 HRS, DRAGON AIR 203 REPORTED DESCENDING FROM FL 140 AND WAS INSTRUCTED TO CONTACT PHUKET APPROACH CONTROL ON 126.2 MHZ.

AT 08:26:00 HRS, BANGKOK AREA CONTROL CLEARED THAI AIR 365 TO MAINTAIN FL 140 AND ASKED THAI AIR 365 TO CONTACT PHUKET APPROACH CONTROL ON 126.2 MHZ. AND REPORT BACK AGAIN WHEN IT WAS CLEARED BY PHUKET APPROACH CONTROL TO DESCEND BELOW FL 140 AND WHEN IT PASSED FL 130.

AT 08:26:47 HRS, DRAGON AIR 203 REPORTED ITS POSITION TO PHUKET APPROACH CONTROL AT 35 NAUTICAL MILES FROM PHUKET VOR/DME, REACHING FL 130. IT WAS CLEARED TO THE PHUKET INITIAL APPROACH FIX (14 NAUTICAL MILES FROM PHUKET VOR/DME) AND TO DESCEND AND MAINTAIN ALTITUDE 4,500 FEET, AND TOLD TO EXPECT TO LAND ON RUNWAY 27. THE QNH GIVEN TO DRAGON AIR 203 WAS 1010 MILLIBARS.

AT 08:27:18 HRS, THAI AIR 365 MADE INITIAL CONTACT WITH PHUKET APPROACH CONTROL THAT IT WAS AT 50 NAUTICAL MILES FROM PHUKET VOR/DME, DESCENDING FROM FL 150 TO FL 140. IT WAS INSTRUCTED TO REPORT AGAIN AT FL 140, AND TOLD TO EXPECT TO LAND ON RUNWAY 27.

AT 08:27:39 HRS, THAI AIR 365 REPORTED REACHING FL 140 AND WAS CLEARED TO PHUKET VOR/DME CLEARANCE LIMIT ON W14 AND TO DESCEND AND MAINTAIN ALTITUDE 7,000 FEET .

AT 08:28:08 HRS, THAI AIR 365 REPORTED BACK TO BANGKOK AREA CONTROL THAT IT WAS CLEARED TO DESCEND TO ALTITUDE 7,000 FEET AND IT WAS PASSING FL 130.

AT 08:28:15 HRS, DRAGON AIR 203 WAS AT 27 NAUTICAL MILES FROM PHUKET VOR/DME AT ALTITUDE 11,000 FEET. THE FLIGHT WAS PERMITTED BY PHUKET APPROACH CONTROL TO EXECUTE A 12 NAUTICAL MILES DME ARC WHEN IT REACHED 14 NAUTICAL MILES FROM PHUKET VOR/DME.

AT 08:29:38 HRS, DRAGON AIR 203 REQUESTED INFORMATION ON LOCAL LOWER CLOUD BASE. THE CLOUD INFORMATION GIVEN TO DRAGON AIR 203 WAS 2/8 CUMULUS AT 1,800 FEET.

AT 08:30:51 HRS, THAI AIR 365 WAS CLEARED TO DESCEND FROM ALTITUDE 7,000 FEET TO ALTITUDE 5,000 FEET.

AT 08:31:08 HRS, DRAGON AIR 203 WAS AT 14 NAUTICAL MILES FROM PHUKET VOR/DME. IT WAS CLEARED TO DESCEND TO ALTITUDE .2,500 FEET AND TO REPORT AGAIN ON INBOUND FINAL TO RUNWAY 27. DRACON AIR 203 ACKNOWLEDGED THE DESCENT CLEARANCE.

AT 08:31:28 HRS, PHUKET APPROACH CONTROL REQUESTED THE DISTANCE OF THAI AIR 365 FROM PHUKET VOR/DME AND IT WAS INFORMED THAT THAI AIR 365 WAS AT 25 NAUTICAL MILES FROM PHUKET VOR/DME. PHUKET APPROACH CONTROL THEN ASSIGNED THAI AIR 365 TO BE NUMBER TWO TO LAND FOLLOWING DRAGON AIR 203. FROM CVR READ OUT, PILOT-IN -COMMAND OF THAI AIR 365 STATED TO HIS CO-PILOT THAT "DRAGON AIR, IT HAS TO MAKE AN APPROACH AGAIN".

AT 08:31:56 HRS, THAI AIR 365 ACKNOWLEDGED THE ASSIGMENT OF NUMBER TWO TO LAND.

AT 08:32:28 HRS, THAI AIR 365 REPORTED APPROACHING ALTITUDE 5,000 FEET AND PHUKET APPROACH CONTROL INFORMED THAI AIR 365 TO STANDBY.

AT 08:32:39 HRS, DRAGON AIR 203 WAS AT ALTITUDE 4,000 FEET. IT WAS CLEARED TO DESCEND FROM ALTITUDE 4.000 FEET TO ALTITUDE 2,500 FEET. LATER ON PHUKET APPROACH CONTROL CLEARED THAI AIR 365 TO DESCEND TO ALTITUDE 4,000 FEET. THE DESCENT CLEARANCE WAS ACKNOWLEDGED BY THE THAI AIR 365 FIRST OFFICER. WHILE SIMULTANEOUSLY THE PILOT-IN-COMMAND OF THAI AIR 365 CALLED OUT APPROACH SPEED (REF+5) 127,131 .

AT 08:33:26 HRS, DRAGON AIR 203 WAS REQUESTED TO REPORT WHEN REACHING ALTITUDE 2,500 FEET.

AT 08:33:42 HRS, THAI AIR 365 REPORTED REACHING ALTITUDE 4,000 FEET AND IT WAS REQUESTED TO REPORT ITS DISTANCE FROM PHUKET VOR/DME . THE REPORTED DISTANCE GIVEN BY THAI AIR 365 WAS 16 NAUTICAL MILES FROM PHUKET VOR/DME.

AT 08:34:09 HRS, DRAGON AIR 203 REPORTED THAT IT WAS AT 11 NAUTICAL MILES FROM THE PHUKET VOR/DME ON RADIAL 090 AT ALTITUDE 2,500 FEET. PHUKET APPROACH CONTROL INSTRUCTED DRAGON AIR 203 TO REPORT

AGAIN AT 5 NAUTICAL MILES FROM THE PHUKET VOR/DME ON FINAL TO RUNWAY 27.

AT 08:34:33 HRS, PHUKET APPROACH CLEARED THAI AIR 365 TO DESCEND TO ALTITUDE 3,000 FEET. THE DESCENT CLEARANCE WAS ACKNOWLEDGED BY THAI AIR 365.

AT 08:34:41 HRS, DRAGON AIR 203 ASKED "WHAT IS THE TRAFFIC DME FROM PHUKET ?" AND THAI AIR 365 REPLIED IMMEDIATELY, "13 VOR/DME".

AT 08:34:49 HRS, DRAGON AIR 203 INFORMED THAI AIR 365 "COPY WE ARE AT 2,500 FEET WE HAVE GOT YOU IN OUR ONE O'CLOCK". DRAGON AIR 203 ALSO INFORMED PHUKET APPROACH CONTROL "WE HAVE THE TRAFFIC AHEAD OF US ONE O'CLOCK ABOUT 5 MILES LEFT TO RIGHT". FROM COCKPIT CONVERSATION OF CVR READOUT, CO-PILOT OF THAI AIR 365 STATED THAT "IT IS BEHIND US!".

AT 08:35:25 HRS, PHUKET APPROACH CONTROL REQUESTED POSITION OF DRAGON AIR 203 AND IT WAS INFORMED THAT DRAGON AIR 203 WAS TURNING RIGHT AT 12 NAUTICAL MILES FROM PHUKET VOR/DME. AT THAT MOMENT THE CO-PILOT AND PILOT-IN-COMMAND OF THAI AIR 365 BEGAN NEARLY AT THE SAME TIME SPEAKING IN COLLOQUIAL THAI WHICH HAD VARIOUS MEANINGS, E.G. DRAGON AIR 203 TRIED TO CUT CORNER OR SNEAKED IN OR MAKE A FALSE POSITION REPORT IN ORDER TO GET FIRST PRIORITY FOR LANDING.

AT 08:35:39 HRS, PHUKET APPROACH CONTROL REQUESTED DRAGON AIR 203 TO CONFIRM ITS 12 NAUTICAL MILES DME POSITION AND IT WAS CONFIRMED THAT DRAGON AIR 203 WAS AT 12 NAUTICAL MILES FROM PHUKET VOR/DME AT ALTITUDE 2,500 FEET.

AT 08:35:48 HRS, PHUKET APPROACH CONTROL REQUESTED POSITION OF THAI AIR 365 AND PILOT-IN-COMMAND OF THAI AIR 365 REPLIED HURRIEDLY IN VERY FAST WORDS "8 DME 8 DME INBOUND". FROM COCKPIT CONVERSATION AT THAT MOMENT CO-PILOT OF THAI AIR 365 EXCLAIMED "OH" FOLLOWED BY THE PILOT-IN-COMMAND'S VOICE "365 REQUEST VISUAL".

AT 08:35:57 HRS, PHUKET APPROACH CONTROL REASSIGNED THAI AIR 365 TO BE NUMBER ONE TO LAND AND DRAGON AIR 203 TO BE NUMBER TWO TO LAND. PILOT OF THAI AIR 365 IMMEDIATELY REPLIED GEARS DOWN .

AT 08:36:06 HRS, DRAGON AIR 203 GAVE WARNING TO PHUKET APPROACH CONTROL "DRAGON AIR 203 WE ARE 2,500 FEET THE TRAFFIC AHEAD IS ABOVE US AND CANNOT DESCEND THROUGH OUR LEVEL , WE ARE IFR". FROM COCKPIT CONVERSATION OF THAI AIR 365 AN UNCLEAR VOICE FORM CO-PILOT WAS HEARD FROM CVR RECORDING WHICH SOUNDED LIKE "WE'D BETTER GO" THEN THE PILOT-IN-COMMAND SAID "WAIT A MINUTE, WAIT A MINUTE, IT IS IFR" SIMULTANEOUSLY A TRIM SOUND WAS HEARD.

AT 08:36:28 HRS, PILOT-IN-COMMAND OF THAI AIR 365 ASKED PHUKET APPROACH CONTROL "WHO IS GOING TO LAND FIRST ?" SHORTLY AFTERWARD A STACCATO SOUND AND AN INCREASE IN THE SOUND OF THE ENGINE WAS HEARD AND THE PILOT CALLED GEARS UP, CHIMED SOUND WAS HEARD FOLLOWED BY THE GROUND PROXIMITY WARNING SOUND

AT 08:36:31 HRS, PHUKET APPROACH CONTROL ASKED THAI AIR 365 IN THAI MEANING "OK THAI AIR 365 DO YOU SEE OTHER TRAFFIC BOEING 737,HONG KONG ?" DURING WHICH TIME THE PILOT FROM DRAGON AIR 203 SAID," DRAGON AIR 203 WE ARE TWO-FIVE " AFTER THAT THERE WAS AN EXCLAMATION FROM THE THAI AIR 365 PILOT "OY!"

AT 08:36:47 HRS, PHUKET APPROACH CONTROL CALLED, "DRAGON AIR 203 ROGER 2,500 FEET, REQUEST DME INBOUND FROM PHUKET ?"

AT 08:36:55 HRS, DRAGON AIR 203 REPORTED TO PHUKET APPROACH CONTROL SIGHTING THAI AIR 365 CRASH INTO THE SEA

THE ACCIDENT SITE WAS AT LATITUDE 08 06 00 NORTH, LONGITUDE 98 27 10 EAST, APPROXIMATELY EIGHT NAUTICAL MILES FROM RUNWAY 27 AT THE PHUKET AIRPORT. THE TIME OF THE ACCIDENT WAS AT 08:36:52 HRS. (DAY TIME)

1.2 INJURIES TO PERSONS

INJURIES	CREW	PASSENGER	OTHERS
FATAL	9	74	-
SERIOUS	-	-	-
MINOR/NONE	-	-	

1.3 DAMAGE TO AIRCRAFT

THE AIRCRAFT WAS DESTROYED.

1.4 OTHER DAMAGE

THERE WAS NO OTHER DAMAGE.

1.5 PERSONNEL INFORMATION

1.5.1 THE PILOT-IN-COMMAND, AGED 53, HELD AN AIRLINE TRANSPORT PILOT LICENCE NO. D-0054 ISSUED BY DEPARTMENT OF AVIATION OF THAILAND, VALID UNTIL 7 DECEMBER B.E. 2530 (A.D.1987) WITH AIRCRAFT RATINGS IN AEROPLANE; SINGLE AND MULTI-ENGINE LAND; CO-PILOT FOR DC-3 AND HS-748 AND PILOT FOR BOEING 737. HE ALSO HAD INSTRUMENT RATING. HE HAD PASSED HIS LAST PROFICIENCY CHECK AND LAST INSTRUMENT RATING CHECK ON 21 JUNE B.E. 2530 (A.D.1987). HE HAD ACCUMULATED THE FOLLOWING FLIGHT TIME :

TOTAL FLIGHT TIME	19,538:08	HRS,
FLIGHT TIME WITH BOEING 737	5,576:30	HRS,
FLIGHT TIME IN THE LAST 90 DAYS	244:50	HRS,
FLIGHT TIME IN THE LAST 30 DAYS	80:00	HRS,
FLIGHT TIME IN THE LAST 24 HRS,	5:20	HRS.

HE WAS A ROUTE TRAINING PILOT FOR BOEING 737.

HIS LAST MEDICAL EXAMINATION WAS DONE ON JUNE 8, B.E. 2530 (A.D. 1987) AT THE ROYAL THAI AIR FORCE AVIATION MEDICINE INSTITUTE. HIS MEDICAL CERTIFICATE WAS VALID UNTIL DECEMBER 7, B.E. 2530 (A.D. 1987) WITH LIMITATIONS ENDORSED ON THE CERTIFICATE THAT THE HOLDER OF THE LICENCE MUST WEAR CORRECTIVE LENS FOR DISTANCE AND NEAR VISION WHILE PERFORMING HIS DUTY.

1.5.2 THE CO-PILOT, AGED 37, HELD A COMMERCIAL PILOT LICENCE NO. C-0337 ISSUE BY DEPARTMENT OF AVIATION OF THAILAND VALID UNTIL MAY 25, B.E. 2531 (A.D.1988) WITH AIRCRAFT RATINGS IN AEROPLANE, SINGLE AND MULTI-ENGINE LAND; CO-PILOT FOR SHORT SD3-30 AND HS-748. HE HAD PASSED AN APPROVED GROUND TRAINING COURSE EXAMINATION FOR BOEING 737 CONDUCTED BY THAI AIRWAYS COMPANY. HE ALSO HAD PASSED A FLIGHT TEST FOR THE BOEING 737 CONDUCTED BY THE THAI AIRWAYS COMPANY UNDER SUPERVISION OF A DEPARTMENT OF AVIATION PILOT EXAMINER. THE CO-PILOT HELD A TEMPORARY BOEING 737 AIRCRAFT TYPE RATING ISSUED BY THE THAI AIRWAYS COMPANY DELEGATED BY THE DEPARTMENT OF AVIATION. HE HAD PASSED HIS LAST PROFICIECNY CHECK IN THE BOEING 737 ON 21 JUNE B.E. 2530 (A.D.1987), HE HAD ACCUMULATED FLIGHT TIME AS FOLLOWS:

TOTAL FLIGHT TIME	6,951:27 HRS,
FLIGHT TIME WITH BOEING 737	156:26 HRS,
FLIGHT TIME IN THE LAST 90 DAYS	156:26 HRS,
FLIGHT TIME IN THE LAST 30 DAYS	65:54 HRS,
FLIGHT TIME IN THE LAST 24 HRS,	5:20 HRS,

THE CO-PILOT LAST MEDICAL EXAMINATION WAS DONE ON MAY 26, B.E. 2530 (A.D. 1987) AT THE ROYAL THAI AIR FORCE AVIATION MEDICINE INSTITUTE. HIS MEDICAL CERTIFICATE WAS VALID UNTIL MAY 25, B.E. 2531 (A.D. 1988). THERE WAS NO LIMITATION ENDORSED ON HIS LICENCE.

1.5.3 THE AIR TRAFFIC CONTROLLER AT PHUKET AIRPORT,

AGED 39, HELD AN AIR TRAFFIC CONTROL LICENCE NO.130 ISSUED BY THE DEPARTMENT OF AVIATION OF THAILAND VALID UNTIL MAY 3, B.E. 2531 (A.D.1988) WITH RATINGS IN AERODROME CONTROL AND APPROACH CONTROL AT PHUKET AIRPORT. HE HAD BEEN WITH THE DEPARTMENT OF AVIATION SINCE MAY, 1 1967, AND HAD ABOUT 10 YEARS EXPERIENCE AS AN AIR TRAFFIC CONTROLLER.

HIS LAST MEDICAL EXAMINATION WAS DONE ON MAY 4, B.E. 2529 (A.D.1986) AT THE ROYAL THAI AIR FORCE AVIATION MEDICINE INSTITUTE. HIS MEDICAL CERTIFICATE WAS VALID UNTIL MAY 3, B.E. 2531 (A.D. 1988).

1.6 AIRCRAFT INFORMATION

1.6.1 THE BOEING 737-200, HS-TBC, SERIAL NUMBER 22267, WAS MANUFACTURED BY THE BOEING COMMERCIAL AIRCRAFT COMPANY LTD., SEATTLE, WASHINGTON, U.S.A. IN B.E. 2523 (A.D. 1980). IT WAS PURCHASED NEW BY THAI AIRWAYS COMPANY AND REGISTERED IN THAILAND ON AUGUST 18, B.E. 2523 (A.D.1980). THE AIRCRAFT WAS OWNED, OPERATED AND MAINTAINED BY THAI AIRWAYS COMPANY FROM THE DATE OF PURCHASE UNTIL THE TIME OF THE ACCIDENT. THE AIRCRAFT HAD A VALID CERTIFICATE OF AIRWORTHINESS ISSUED BY THE DEPARTMENT OF AVIATION OF THAILAND. IT ACCUMULATED A TOTAL TIME OF 16.963:48 HRS, AT THE TIME OF THE ACCIDENT WITH 20,864 TOTAL NUMBER OF LANDINGS. IT HAD A TIME FROM LAST OVERHAUL OF 2,754:11 HRS, SINCE JUNE 16, B.E. 2529 (A.D. 1986). THE LAST 100 HRS PERIODIC INSPECTION (A-CHECK) WAS DONE ON AUGUST 10, B.E. 2530 (A.D. 1987).

1.6.2 THE AIRCRAFT WAS EQUIPPED WITH TWO PRATT AND WHITNEY JT8D-7 TURBO FAN ENGINES. MAINTENANCE HAD BEEN CURRENT AND IN COMPLIANCE WITH COMPANY AND OFFICIAL REQUIREMENTS. DETAILS ARE AS FOLLOW:

1.6.2.1 NUMBER 1 ENGINE, SERIAL NUMBER P 702821B HAD BEEN MANUFACTURED ON OCTOBER 13, B.E.2523 (A.D.1980). IT HAD A TOTAL OPERATIONAL TIME OF 10,509:05 HRS, SINCE NEW AND 2,528:19 HRS, SINCE LAST OVERHAUL.

1.6.2.2 NUMBER 2 ENGINE, SERIAL NUMBER P 702897B HAD BEEN MANUFACTURED ON NOVEMBER 14, B.E.2523 (A.D.1980). IT HAD A TOTAL OPERATIONAL TIME OF 10,839:27 HRS, SINCE NEW AND 3,768:04 HRS, SINCE LAST OVERHAUL.

1.7 METEOROLOGICAL INFORMATION

THE WEATHER AT THE SITE OF THE OCCURRENCE AS OBSERVED INFLIGHT BY THE PILOT OF DRAGON AIR 203 WAS SCATTERD CUMULUS OVER THE AIRPORT AND THE AREA TO THE WEST OF THE AIRPORT. THE LET-DOWN AREA WAS CLEAR WITH GOOD FLIGHT VISIBILITY.

METAR 08:30:00 HRS, AT PHUKET AIRPORT WAS AS FOLLOWS:

METAR	310830 HRS, VTSP
WIND	290/09
VISIBILITY	9,000 METRES
WEATHER	LIGHT MIST (10BR)
CLOUDS	2CU018 3SC030 6CI 300
TEMP/DEW PT.	31/25
QNH	1010 MBS.

1.8 AIDS TO NAVIGATION

PHUKET AIRPORT WAS EQUIPPED WITH CONVENTIONAL VOR/DME, DOPPLER VOR/DME AND NDB. THERE WAS PAPI AT RUNWAY 09 AND T VASIS AT RUNWAY 27. THEY RECEIVED PROPER PERIODIC FLIGHT INSPECTIONS. THERE IS NO RADAR AT THE AIRPORT AND NO PRECISION APPROACH FACILITIES. IT HAS A VOR/DME AND ADF APPROACH PROCEDURES. A DOPPLER VOR/DME WAS COMMISSIONED ON THE AIRPORT. A NOTAM HAS BEEN DISTRIBUTED TO ALL CONCERNS BUT NO DOPPLER VOR/DME APPROACH PROCEDURE HAS YET BEEN ESTABLISHED.

1.9 COMMUNICATIONS

TWO-WAY R/T COMMUNICATION BETWEEN BOTH AIRCRAFT AND PHUKET APPROACH CONTROL WERE OPERATING NORMALLY.

1.10 AERODROME INFORMATION

PHUKET AIRPORT IS A LICENSED AIRPORT, OPERATED AND CONTROLLED BY THE DEPARTMENT OF AVIATION. THE AIRPORT IS LOCATED ON THE ISLAND AT AN ELEVATION OF 69 FEET ABOVE MEAN SEA LEVEL. THE RUNWAY DIRECTION IS 09/27. IT HAS THREE TAXIWAYS, TAXIWAY A, TAXIWAY B AND TAXIWAY C. THE RUNWAY CONSISTS OF ASPHALT AND CONCRETE. THERE WERE NO UNUSUAL AIRPORT OR GROUND FACILITY ACTIVITIES OR CONDITIONS AT PHUKET AIRPORT DURING THE ACCIDENT OF THAI AIR 365.

1.11 FLIGHT RECORDERS

1.11.1 THE HS-TBC WAS EQUIPPED WITH FAIRCHILD FLIGHT RECORDERS. THEY WERE INSTALLED IN THE TAIL SECTION OF THE AIRCRAFT. THE FLIGHT DATA RECORDER WAS A

MODEL 5424, SERIAL NUMBER 6357. IT WAS RETRIEVED FROM THE SEA TWO DAYS AFTER THE ACCIDENT. THE COCKPIT VOICE RECORDER WAS A MODEL A-100. IT WAS RETRIEVED FROM THE SEA FOUR DAYS AFTER THE ACCIDENT. BOTH RECORDERS WERE DAMAGE BY IMPACT FORCES. THE MAGAZINES CONTAINING THE STEEL FOIL RECORDING MEDIUM AND MAGNETIC TAPE RECORDING MEDIUM HAD BEEN REMOVED FROM THE RECORDERS FOLLOWING RECOVERY FROM THE SEA AND WERE BROUGHT TO THE LABORATORIES OF THE U.S. NATIONAL TRANSPORTATION SAFETY BOARD FOR READOUT AND TRANSCRIPTIONS. THE COCKPIT VOICE RECORDER TAPE WAS IN GOOD CONDITION. A NORMAL READOUT OF THE TAPE WAS OBTAINED. THE FDR STEEL FOIL MEDIUM WAS ALSO IN GOOD CONDITION. THE ALTITUDE TRACE READOUT SHOWED THAT THE DESCENT OF HS-TBC TO PHUKET AIRPORT APPEARED TO BE HIGHER THAN THE ALTITUDE WHICH THE PILOT REPORTED TO PHUKET APPROACH CONTROL. ADJUSTMENT OF THE FDR READOUT ALTITUDE TRACE COINCIDED WITH THE PILOT'S REPORTED ALTITUDE.

1.11.2 THE VR-HYL WAS EQUIPPED WITH FLIGHT RECORDERS. THE COCKPIT VOICE RECORDING OF THE EVENTS SURROUDING THE ACCIDENT WAS ERASED ON THE AIRCRAFT'S RETURN FLIGHT TO HONG KONG.

1.12 WRECKAGE

THE AIRCRAFT CRASHED INTO THE WATER AT ABOUT A 40 DEGREE FLIGHT PATH ANGLE WITH CONSIDERABLE FORCE, AND SUBMERGED TO THE BOTTOM OF THE SEA. IT DISINTEGRATED ON IMPACT. VERY FEW PARTS OF THE WRECKAGE WERE RETRIEVED. THEY CONSISTED OF LOWER WING SKIN, PART OF EMPENNAGE WITH REAR PRESSURE BULKHEAD AND VERTICAL FIN ATTACHED, APU AND TAILCONE, APU EXHAUST DUCT, SMALL PIECES OF FUSELAGE, EMERGENCY EXIT DOOR, CLOCK, ALTIMETER, CO-PILOT WHEEL, TIRES, UNIDENTIFIED PIECES OF FLAPS AND SPOILER, FACE OF AIRSPEED INDICATOR, FDR AND CVR. THE WRECKAGE WAS RETRIEVED FROM 60 FEET OF WATER AND THE BOTTOM WAS FLAT.

1.13 MEDICAL AND PATHOLOGICAL INFORMATION

BODIES OF PERSONS ON BOARD WERE RECOVERED FROM THE SEA A FEW DAYS AFTER THE ACCIDENT. THE BODIES WERE SEVERELY TRAUMATIZED. MOST OF THE FACES WERE MUTILATED.

1.14 FIRE

NO EVIDENCE OF FIRE IN FLIGHT WAS FOUND.

1.15 SURVIVAL ASPECT

THE PILOT OF DRAGON AIR 203 HAD BEEN KEEPING THAI AIR 365 IN SIGHT. HE SAW THAI AIR 365 PITCH VIOLENTLY NOSE DOWN AND STRIKE THE WATER. HE REPORTED HIS OBSERVATIONS AND THE LOCATION OF THE CRASH TO PHUKET APPROACH CONTROL. HE PROCEEDED TO THE CRASH SITE AND ORBITED THE AREA. AFTER SIGHTING SOME FLOATING DEBRIS, HE DECIDED TO LAND. HE WENT TO CONTROL TOWER AFTERWARD ON A LARGE-SCALE MAP. AND SHOWED THE POSITION OF CRASH SITE TO THE AIR TRAFFIC CONTROLLER. PHUKET TOWER CALLED THE NEARBY MARINE POLICE UNIT, PHUKET PROVINCIAL OFFICE AND LOCAL FACILITIES TO RENDER RESCUE ASSISTANCE. THIS ACCIDENT WAS NOT SURVIVABLE TO THE PERSONNEL ON THE AIRCRAFT. ALL OF THE FATALLY INJURED WERE RETRIEVED FROM THE SEA IN FEW DAYS AFTER THE DATE OF ACCIDENT AND MOVED TO THE HOSPITAL FOR AUTOPSY AND INDENTIFICATION.

1.16 TEST AND RESEARCH

1.16.1 THE AIRSPEED AND THE ALTITUDE INDICATORS WERE SENT TO THE LABORATORY OF U.S. NATIONAL TRANSPORTATION SAFETY BOARD FOR EXAMINATION. THE RESULT OF EXAMINATION COULD NOT REVEAL ANY INFORMATION FOR THE INVESTIGATION.

1.16.2 SIMULATION FLIGHTS ON AN ENGINEERING SIMULATOR AT THE BOEING COMMERCIAL AIRCRAFT COMPANY, SEATTLE, WASHINGTON, U.S.A. WERE CONDUCTED BY THAI AND BOEING COMPANY FLIGHT TEST PILOTS. THE SIMULATOR WAS FLOWN TO DUPLICATE THE FLIGHT OF THAI AIR 365. THE SIMULATION WAS BASED ON THE PRELIMINARY FLIGHT RECORDER DATA PROVIDED BY THE U.S. NATIONAL TRANSPORTATION SAFETY BOARD (U.S. NTSB). DURING THE SIMULATOR SESSION SEVERAL CONFIGURATIONS AT 98,000 LBS WERE FLOWN ,FLAP UP, GEAR UP, GEAR DOWN, AND GEAR DOWN WITH SPEEDBRAKES. EACH CONFIGURATION WAS FLOWN WITH VARYING AMOUNS OF POWER. HOWEVER, NO DEFINITE CONCLUSIONS ABOUT THE PROBABLE CONFIGURATION OF THE AIRCRAFT PRIOR TO IMPACT COULD BE DRAWN BY SIMPLE COMPARISON OF THE SUMULATOR TIME HISTORIES WITH THE FDR DATA.

2. ANALYSIS

2.1 THE AIRCRAFT WAS CERTIFICATED, EQUIPPED AND MAINTAINED ACCORDING TO REGULATIONS. THE WEIGHT AND BALANCE WERE WITHIN PRESCRIBED LIMITS. THE PILOT-IN-COMMAND AND CO-PILOT WERE CERTIFIED IN ACCORDANCE WITH GOVERNMENTAL AND COMPANY REGULATIONS.

2.2 THE WEATHER AT THE SITE OF THE ACCIDENT WAS FAIR AND WAS NOT IN ANYWAY A FACTOR IN THE ACCIDENT. ANALYSIS OF FDR AND CVR DATA FROM THE THAI AIR 365 FLIGHT REVEALED NO EVIDENCE OF A MALFUNCTIONING OF AIRCRAFT'S SYSTEMS OR ITS POWERPLANTS. THE SOUND OF THE ENGINES WAS AUDIBLE ON CVR TAPE RECORDING BUT THE SOUND OF FLAP AND SPEED BRAKE EXTENSION COULD NOT BE HEARD, NOR WAS A COMMAND GIVEN BY THE CAPTAIN TO EXTEND THEM. ONLY THE SOUND OF GEAR EXTENSION AND THE CHIME WAS HEARD IMMEDIATELY AFTER PHUKET APPROACH CONTROL ADVISED THAI AIR 365 TO BE NUMBER ONE TO LAND.

2.3 ANALYSIS OF THE FLIGHT PROFILE FROM THE FDR READOUT ,SHOWED THAT THAI AIR 365 FIRST CONTACTED PHUKET APPROACH CONTROL AT 08:27:18 HRS. WHEN IT WAS DESCENDING FROM FL 150 INBOUND TO THE PHUKET AIRPORT. THE RATE OF DESCENT VARIED BETWEEN 1,500 FEET AND 2,400 FEET PER MINUTE, AND THE SPEED DURING THE DESCENT VARIED BETWEEN 290 KNOTS AND 270 KNOTS. THE SPEED BEGAN TO DECREASE AS THE AIRCRAFT REACHED ALTITUDE 4,000 FEET, AT 08:33:30 HRS. AT 08:34:49 HRS,THE SPEED WAS 220 KNOTS, AND THAT SPEED WAS MAINTAINED FOR ABOUT 25 SECONDS UNTIL 08:35:10 HRS, WHEN THE AIRCRAFT REACHED ITS LAST ASSIGNED ALTITUDE OF 3,000 FEET. AFTER THAT POINT THE SPEED BEGAN DECREASING AGAIN. ATABOUT 08:36:34 HRS, THE SPEED FINALLY DROPPED TO 152 KNOTS, AND THE AIRCRAFT ENTERED INTO A STALL. THE AIRCRAFT IMPACTED THE WATER AT ABOUT 08:36:52 HRS.

2.4 CONSIDERING THE VALUE IN THE LOAD MESSAGE AND BALANCE SHEET PREPARED BY THAI AIRWAYS COMPANY PERSONNEL, THE COMPUTED LANDING WEIGHT OF THAI AIR 365 ON ARRIVING AT PHUKET AIRPORT WAS 98,418 POUNDS.
THEREFORE THAI AIR 365 GROSS WEIGHT AT THE TIME OF THE ACCIDENT WAS

APPROXIMATELY THE SAME AS ITS LANDING WEIGHT. THE INTERPOLATION OF THE BOEING-737 AIRCRAFT PERFORMANCE CHART SHOWED A STALL SPEED OF ABOUT 105 KNOTS AT A GROSS WEIGHT OF 98,418 POUNDS WITH 15 DEGREES OF LANDING FLAPS, LANDING GEAR DOWN, AND SPEED BRAKES DOWN (RETRACTED). SIMULATOR TESTS SHOWED THAT THE STICK SHAKER ACTIVATION SPEED WAS 161 KNOTS AT AND ENTRY RATE OF 1 KNOT PER SECOND WITH THE FLAPS UP , LANDING GEAR DOWN, SPEEDBRAKES DOWN AT C.G. SIMILAR TO THE ACCIDENT AIRCRAFT. ALSO, SIMULATOR TESTS FLOWN WITH THE SPEEDBRAKES UP (EXTENDED) SHOWED THAT THE STALL SPEEDS WERE CONSISTENTLY HIGHER, BETWEEN 169 AND 174 KNOTS. HOWEVER, THE FLIGHT RECORDER DATA SHOWED THAT THE STICK SHAKER ACTIVATED AT 163 KNOTS AND THE AIRCRAFT STALLED AT 152 KNOTS WHILE IT WAS IN LEVEL FLIGHT AT 3,000 FEET. THEREFORE, IT IS CONCLUDED THAT THE AIRCRAFT WAS NOT IN PROPER LANDING CONFIGURATION, WITH THE FLAPS EXTENDED, NOR IS IT BELIEVED THAT THE SPEEDBRAKES WERE USED TO SLOW THE AIRCRAFT IN PREPARATION FOR LANDING.

2.5 IN CONSIDERATION OF BOTH FLIGHTS , THEY WERE ON CONVERGING FLIGHT PATHS WHILE ATTENDING TO LAND AT PHUKET AIRPORT. DRAGON AIR 203 WAS APPROACHING FROM NORTHEAST OF PHUKET AIRPORT ON RADIAL 025 WHILE THAI AIR 365 WAS APPROACHING FROM SOUTHEAST ON RADIAL 119. DRAGON AIR 203 WAS MAKING A RIGHT 12 DME ARC TURN AND THAI AIR 365 WAS MAKING A STRAIGHT-IN APPROACH PROCEEDING TO ITS ASSIGNED CLEARANCE LIMIT PHUKET VOR/DME IN ORDER TO MAKE A PROCEDURE TURN OVER PHUKET VOR/DME. BUT WHEN THE AIRCRAFT WAS ADVISED TO BE NUMBER ONE TO LAND, THE PILOT THEN LOWERED LANDING GEAR IN ORDER TO LAND. BOTH AIRCRAFT WERE APPROACHING TO LAND ON RUNWAY 27 OF PHUKET AIRPORT IN FOLLOWING SEQUENCES :

2.5.1 EVENT

- DRAGON AIR 203 FIRST CONTACTED PHUKET APPROACH CONTROL AT 08:18:34 HRS, DESCENDING FORM FL 190 INBOUND TO PHUKET AIRPORT ON RADIAL 025 AT 08:26:51 HRS. IT WAS AT 35 NAUTICAL MILES FROM PHUKET VOR/DME AND WAS CLEARED TO DESCEND TO ALTITUDE 4,500 FEET.

- THAI AIR 365 FIRST CONTACTED PHUKET APPROACH CONTROL AT 08:27:22 HRS, DESCENDING FROM FL 150 TO FL 140 INBOUND ON RADIAL 119 AT 50 NAUTICAL MILES FROM PHUKET VOR/DME AND IT WAS REQUESTED TO REPORT AGAIN AT FL 140.

AT 08:27:39 HRS, THAI AIR 365 REPORTED REACHING FL 140. AT 08:27:49 HRS, IT WAS CLEARED TO PHUKET VOR/DME AND TO DESCEND AND MAINTAIN ALTITUDE 7,000 FEET

CONSIDERATION

- (FROM FDR READOUT) DRAGON AIR 203 WAS AT 35 NAUTICAL MILES OF PHUKET VOR/DME AT 08:26:51 HRS. AT THAT TIME, SPEED OF THAI AIR 365 WAS 280 KNOTS. AT 08:27:12 HRS, THAI AIR 365 WAS AT 50 NAUTICAL MILES OF PHUKET VOR/DME AND THE SPEED WAS ALSO AT 280 KNOTS. SO THAT AT 08:26:51 HRS, WHEN DRAGON AIR 203 WAS AT 35 NAUTICAL MILES OF PHUKET VOR/DME , THAI AIR 365 SHOULD HAVE BEEN AT 52 NAUTICAL MILES FROM PHUKET VOR/DME. IT WAS 17 NAUTICAL MILES BEHIND DRAGON AIR 203 .

2.5.2 EVENT

- AT 08:28:15 HRS, DRAGON AIR 203 WAS AT 27 NAUTICAL MILES FROM PHUKET VOR/DME, PASSING FL 110, THE PILOT REQUESTED AND WAS GIVEN PERMISSION TO FLY TO 12 DME ARC. AT 08:31:08 HRS, DRAGONAIR 203 REPORTED AT 14 NAUTICAL MILES FROM PHUKET VOR/DME AND WAS CLEARED TO DESCEND TO ALTITUDE 2,500 FEET.
- AT 08:31:35 HRS, THAI AIR 365 WAS AT 25 NAUTICAL MILES FROM PHUKET VOR/DME AND WAS ASSIGNED TO BE NUMBER TWO TO LAND FOLLOWING DRAGON AIR 203. IT WAS ALSO CLEARED TO DESCEND TO ALTITUDE 5,000 FEET. FROM COCKPIT CONVERSATION. DURING THAT TIME PILOT OF THAI AIR 365 SAID, "DRAGON AIR 203, IT HAS TO MAKE AN APPROACH AGAIN"
- AT 08:33:59 HRS, THAI AIR 365 WAS AT 16 NAUTICAL MILES OF PHUKET VOR/DME AT ALTITUDE 4,000 FEET.
- AT 08:34:09 HRS, DRAGON AIR 203 REPORTED IT WAS AT 11 NAUTICAL MILES FROM PHUKET VOR/DME ON RADIAL 090 AT ALTITUDE ABOUT 2,500 FEET. IT WAS REQUESTED TO REPORT AGAIN AT 5 NAUTICAL MILES FROM PHUKET VOR/DME ON FINAL FOR RUNWAY 27.
- AT 08:34:33 HRS, PHUKET APPROACH CONTROL CLEARED THAI AIR 365 TO DESCEND TO ALTITUDE 3,000 FEET.

CONSIDERATION

- ACCORDING TO FLIGHT CREW OF DRAGON AIR 203 INTERVIEW , THEY SAID THAT AT THAT TIME THEY SAW THAT THAI AIR 365 WAS HIGH IN ITS WIND SCREEN AND MOVIN FROM LEFT TO RIGHT AT ABOUT FIVE MILES AHEAD OF THEM . THEY THOUGHT THAI AIR

365 WAS FLYING FAST AND WOULD HAVE CONTINUED TO THE VOR TO MAKE VOR APPROACH. (FROM FDR READOUT) THE SPEED OF THAI AIR 365 AT THAT TIME AT ALTITUDE 4,200 FEET WAS ABOUT 270 KNOTS . BY INTERPOLATION OF BOEING 737 OPERATIONS MANUAL THE HOLDING SPEED OF BOEING 737 AT A GROSS WEIGHT OF 100,000 POUNDS AT ALTITUDE 5,000 FEET WAS AT 210 KNOTS. SO, THE SPEED OF THAI AIR 365 AT 16 NAUTICAL MILES FROM PHUKET VOR/DME, AT ALTITUDE 4,200 FEET SHOULD HAVE BEEN DECREASING TO AT 210 KNOTS. THE SPEED OF THAI AIR 365 AT THAT TIME WAS 60 KNOTS FASTER THAN ITS NORMAL SPEED. AS THAI AIR 365 WAS ADVISED TO BE NUMBER TWO TO LAND FOLLOWING DRAGON AIR 203 BUT SPEED OF THAI 365 WAS VERY FAST , LATER ON IT WAS AHEAD OF DRAGON AIR 203 . PHUKET APPROACH CONTROL PROVIDED VERTICAL SEPARATION FOR BOTH AIRCRAFT AT 500 FEET. IT WAS BELOW MINIMUM SEPARATION PRESCRIBED BY DOC 4444 (RULES OF THE AIR AND AIR TRAFFIC SERVICES). THE MINIMUM VERTICAL SEPARATION AS PRESCRIBED BY THE DOCUMENT WAS AT 1,000 FEET.

2.5.3 EVENT

- AT 08:34:41 HRS, DRAGON AIR 203 ASKED PHUKET APPROACH CONTROL" WHAT IS THE TRAFFIC'S DME FROM PHUKET" THAI AIR 365 REPORTED TO DRAGON AIR 203 DIRECTLY, "13 DME VOR". DRAGON AIR 203 THEN INFORMED THAI AIR 365, "COPY WE ARE 2,500 FEET, WE HAVE GOT YOU IN OUR ONE O'CLOCK."
- AT 08:35:57 HRS, THAI AIR 365 REPORTED POSITION AT 8 NAUTICAL MILES OF PHUKET VOR/DME AND REQUESTED VISUAL LANDING. ABOUT NINE SECONDS LATER, IT WAS REASSIGNED TO BE NUMBER ONE TO LAND AND DRAGON AIR 203 WAS TO BE NUMBER TWO. THE PILOT OF THAI AIR 365 THEN IMMEDIATELY LOWERED LANDING GEARS IN ORDER TO LAND.
- AT 08:36:17 HRS, DRAGON AIR 203 GAVE CAUTION TO PHUKET APPROACH CONTROL " DRAGON AIR 203, WE ARE AT 2,500 FEET. THE TRAFFIC AHEAD IS ABOVE US AND CAN NOT DESCEND THROUGH OUR LEVEL . WE ARE IFR. " DURING THAT TIME IT IS BELIEVED THAT CO-PILOT OF THAI AIR 365 STATED TO HIS PILOT-IN-COMMAND, "WE'D BETTER GO" AND THE PILOT-IN-COMMAND SAID "IT IS IFR, WAIT A MINUTE, WAIT A MINUTE," FOLLOWED BY THE SOUND OF STABILIZER TRIM OPERATING.

- AT 08:36:28 HRS, PILOT OF THAI AIR 365 ASKED PHUKET APPROACH CONTROL "WHO IS GOING TO LAND FIRST ?" THIS WAS IMMEDIATELY FOLLOWED BY SEVERAL SECONDS OF A STACCATO SOUND IDENTIFIED AS THE STICK SHAKER, AND THE PILOT-IN-COMMAND CALLING FOR GEARS UP AND THE SOUND OF THE CHIME, ALSO AN INCREASE IN ENGINE SOUND WAS HEARD, FOLLOWED BY THE PILOT'S EXCLAMATION. "OY!" AND GROUND PROXIMITY WARNING SOUND. DURING THAT TIME PHUKET APPROACH CONTROL ASKED PILOT OF THAI AIR 365 WHETHER HE HAD SIGHTED DRAGON 203

CONSIDERATION

DRAGON AIR 203 HAD ALREADY ESTABLISHED 12 DME ARC AT ALTITUDE 2,500 FEET AND WAS GOING TO TURN TO INBOUND ON FINAL FOR RUNWAY 27. IT HAD FIRST PRIORITY IN APPROACH SEQUENCE AND THAI AIR 365 HAD SECOND PRIORITY.BUT THE PILOT OF THAI AIR 365 TRIED TO OVERTAKE DRAGON AIR 203 BY INCREASING THE SPEED OF THE AIRCRAFT AND REQUESTED VISUAL LANDING. THIS ASSUMPTION IS SUPPORTED BY FOLLOWING REASONS,

(1) COCKPIT CONVERSATION AT 08:31:35 HRS, SINCE THE PILOT OF THAI AIR 365 SAID, "DRAGON AIR HAS TO MAKE AN APPROACH AGAIN".

(2) AT 08:34:49 HRS, AFTER DRAGON AIR 203 REPORTED SIGHTING THAI AIR 365 AT "ONE O'CLOCK ABOUT 5 MILES LEFT TO RIGHT," THE THAI AIR 365 COPILOT BELIEVED THAT DRAGON AIR 203 WAS BEHIND THEM.

(3) AT 08:35:25 HRS, DRAGON AIR 203 REPORTED IT WAS TURNING RIGHT AT 12 NM, THE THAI AIR 365 FLIGHTCREW SURMISED THAT DRAGON AIR 203 MADE A FLASE POSITION REPORT TO GAIN LANDING PRIORITY. THIS EVIDENTLY PROMPTED THE THAI AIR 365 PILOT-IN-COMMAND TO HURRIEDLY REPORT HIS POSITION AS 8 DME, AT 08:35:48. HOWEVER, THE TIME INTERVAL BETWEEN HIS POSITION REPORT AT 13 DME, AT 08:34:41, AND HIS 8 DME REPORT COMPUTES TO A SPEED OF 270 KNOTS, BUT FDR DATA SHOWED THE AIRCRAFT'S ACTUAL SPEED AT 220 KNOTS. THEREFORE, THE PILOT-IN-COMMAND INTENTIONALLY MISLED THE CONTROLLER WHICH RESULTED IN THE CHANGE OF LANDING SEQUENCE.

THE WORDS "REQUEST VISUAL LANDING" COULD NOT BE HEARD BY PHUKET APPROACH CONTROL BECAUSE AT THAT MOMENT PHUKET APPROACH CONTROL WAS IN CONTACT WITH DRAGON AIR 203. SINCE DRAGON AIR 203 HAD FIRST PRIORITY, PHUKET

APPROACH CONTROL SHOULD NOT HAVE REASSIGNED THAI AIR 365 TO BE NUMBER ONE TO LAND. HE SHOULD HAVE LET THAI AIR 365 PROCEED TO ITS CLEARANCE LIMIT OF THE PHUKET VOR/DME OR HE SHOULD HAVE HELD THAI AIR 365 AT 14 DME IAF.

2.6 THE FAILURE IN THE DIRECT COMMUNICATION LINK BETWEEN BANGKOK AREA CONTROL AND PHUKET APPROACH CONTROL WAS NOT A FACTOR IN THE ACCIDENT DUE TO BEFORE THE ACCIDENT TOOK PLACE THE TWO AIRCRAFT HAD ALREADY TRANSFERED TO THE CONTROL OF PHUKET APPROACH CONTROL.

2.7 AFTER PILOT OF THAI AIR 365 LOWERED LANDING GEARS, THE AIRCRAFT WAS STILL MAINTAINING ALTITUDE 3,000 FEET. THEN THE SPEED OF THE AIRCRAFT CONTINOUSLY DECREASED AFTERWARD UNTIL THE AIRCRAFT STALLED. IT IS PROBABLE THAT THE CO-PILOT DID NOT MONITOR THE AIRCRAFT INSTRUMENTS BECAUSE HE WAS CONCENTRATING ON THE CONFLICTING TRAFFIC.

2.8 FROM CVR RECORDING, THE CO-PILOT OF THAI AIR 365 WAS IN COMMUNICATION WITH AIR TRAFFIC CONTROL UNITS , SO THE PILOT-IN-COMMAND WAS PILOTING THE AIRCRAFT.

2.9 ACCORDING TO BOEING SIMULATOR FLIGHT TESTS, THE AIRCRAFT WAS AT A GROSS WEIGHT OF 98,418 POUNDS AT IDLE THRUST WITH FLAPS UP AND LANDING GEARS DOWN. THE STICK SHAKER SPEED WAS AT 161 KNOTS . FROM THAI AIR 365 FDR READ OUT, THE STICK SHAKER SPEED OF THAI AIR 365 WAS AT ABOUT 163 KNOTS NEARLY THE SAME AS THE SIMULATOR FLIGHT TEST. THE BOEING COMPANY COMMENCED THAT MOST LIKELY AIRCRAFT CONFIGURATION APPROXIMATES STICK SHAKER SPEED AT FLAPS UP IS BETWEEN 159 TO 163 KNOTS AND THERE IS NO FLAPS SELECTION AUDIBLE ON CVR OF THAI AIR 365. STICK SHAKER SPEED OF THAI AIR 365 BEGAN TO ACTIVATE AT ABOUT 08:36:28 HRS, AND THE AIRCRAFT ENTERED INTO STALL AT ABOUT 08:36:38 HRS,. IT BEGAN ACTIVATE ABOUT 10 SECONDS BEFORE STALL.

2.10 DURING THE SIMULATOR FLIGHT TEST OF BOEING 737 AT THE BOEING AIRCRAFT COMPANY. THE FLIGHT TEST PILOT COULD RECOVER FROM STALL AT ALTITUDE 3,000 FEET.

IN CASE OF THAI AIR 365, THE PILOT COULD NOT MADE STALL RECOVERING DUE TO THE FOLLOWING REASONS;

2.10.1 THE PILOT OF THAI AIR 365 PREOCCUPIED HIS ATTENTION WITH ANOTHER AIRCRAFT SO THAT HE MADE A STALL RECOVERY LATER THAN THE TEST PILOT DID IN SIMULATOR FLIGHT TEST.

2.10.2 ACCORDING TO FDR READOUT, THE FLIGHT CHARACTERISTIC OF THAI AIR 365 DURING STALL WAS DIFFERENT FROM SIMULATOR. THAI AIR 365 PITCHED VIOLENTLY FROM 320 DEGREES TO 180 DEGREES AND BACK TO 260 DEGREES.

2.10.3 AN ANALYSIS OF CVR READOUT REVEALED THAT THE INCREASE OF BOTH ENGINES NOISE DIFFERED WITH 2.5 SECONDS WHICH MIGHT HAVE CAUSED THE AIRCRAFT PITCH VIOLENTLY.

3. CONCLUSIONS

3.1 FINDINGS

3.1.1 THE AIRCRAFT WAS CERTIFICATED AND MAINTAINED ACCORDING TO APPROVED PROCEDURE

3.1.2 THE PILOT-IN-COMMAND AND THE CO-PILOT WERE CERTIFIED AND QUALIFIED FOR THE FLIGHT.

3.1.3 WEIGHTS AND BALANCE OF THE AIRCRAFT WERE WITHIN PRESCRIBED LIMIT.

3.1.4 THERE WAS NO EVIDENCE OF POWERPLANTS OR OTHER SYSTEMS FAILURE DURING THE TIM OF ACCIDENT.

3.1.5 THE WEATHER AT THE SITE OF ACCIDENT WAS FAIR.

3.1.6 TWO WAY RADIO COMMUNICATIONS BETWEEN PHUKET APPROACH CONTROL AND BOTH AIRCRA WERE NORMAL.

3.1.7 THE FAILURE IN THE DIRECT COMMUNICATION LINK BETWEEN BANGKOK AREA CONTROL AN PHUKET APPROACH WAS NOT A FACTOR IN THE ACCIDENT.

3.1.8 THERE IS NO EVIDENCE THAT FLAPS AND SPEEDBRAKES WERE EXTENDED PRIOR TO THE STALL.

3.1.9 BOTH AIRCRAFT WERE ON CONVERGING FLIGHT PATHS TO LAND AT PHUKET AIRPORT.

3.1.10 DRAGON AIR 203 WAS CLEARED TO PHUKET APPROACH FIX AND THAI AIR 365 WAS CLEARE TO PHUKET VOR/DME.

3.1.11 AT INITIAL CONTACT, DRAGON AIR 203 ESTIMATED TO BE OVER PHUKET AIRPORT BEFORE THAI AIR 365.

3.1.12 AT FIRST PHUKET APPROACH CONTROL INSTRUCTED THAI AIR 365 TO BE NUMBER TWO TO LAND FOLLOWING DRAGON AIR 203.

3.1.13 LATER ON THAI AIR 365 BECAME AHEAD OF DRAGON AIR 203.

3.1.14 PHUKET APPROACH CONTROL THEN REASSIGNED THAI AIR 365 TO BE NUMBER ONE TO LAND AND DRAGON AIR 203 TO BE NUMBER TWO.

3.1.15 HAVING BEEN REASSIGNED TO BE NUMBER ONE TO LAND, PILOT OF THAI AIR 365 LOWERED LANDING GEARS.

3.1.16 AFTER LANDING GEARS WENT DOWN, THAI AIR 365 WAS STILL MAINTAINING ALTITUDE AT 3,000 FEET.

3.1.17 AFTER PHUKET APPROACH CONTROL REASSIGNED THAI AIR 365 TO BE NUMBER ONE TO LAND AND DRAGON AIR 203 TO BE NUMBER TWO, THE PILOT OF DRAGON AIR 203 GAVE CAUTION TO PHUKET APPROACH CONTROL BY STATING "DRAGON AIR 203, WE ARE 2,500 FEET, THE TRAFFIC AHEAD IS ABOVE US AND CAN NOT DESCEND THROUGH OUR LEVEL, WE ARE IFR"

3.1.18 PILOT OF THAI AIR 365 ASKED PHUKET APPROACH CONTROL "WHO IS GOING TO LAND FIRST ?"

3.1.19 PHUKET APPROACH CONTROL THEN ASKED PILOT OF THAI AIR 365 WHETER HE SIGHTED DRAGON AIR 203.

3.1.20 AFTER LANDINGS GEARS WENT DOWN, THAI AIR 365 WAS STILL MAINTAINING ALTUTUDE AT 3,000 FEET AND THE SPEED GRADUALLY DECREASED FROM 210 KNOTS TO 150 KNOTS AND THEN THE AIRCRAFT BEGAN TO STALL. THE PILOT APPLIED GEARS UP AND TRIED TO RECOVER FROM STALL BUT THE ALTITUDE WAS LOW THE AIRCRAFT THEN CRASHED INTO THE SEA.

3.1.21 THE THAI AIR FLIGHTCREW BECAME CONFUSED OVER THE EXACT LOCATION OF DRAGON AIR DURING THE APPROACH.

3.1.22 THE DECISION BY THE APPROACH CONTROLLER TO CHANGE THE LANDING SEQUENCE ADDED TO THE CONFUSION OVER WHO TO HAVE LANDING PRIORITY.

3.1.23 THE THAI AIR PILOT-IN-COMMAND BECAME DISTRACTED AT A CRITICAL TIME IN THE INITIAL APPROACH AND FAILED TO REACT IN TIME TO PREVENT THE AIRCRAFT FROM STALLING.

3.2 PROBABLE CAUSE

THE AIRCRAFT ACCIDENT INVESTIGATION COMMITTEE DETERMINES THAT THE PROBABLE CAUSE ACCIDENT WAS: THE PILOT SLOWED THE AIRCRAFT AND IT STALLED WHILE THE PILOT PREPARED BE NUMBER ONE ON LANDING AS ADVISED BY PHUKET APPROACH CONTROL. IT APPEARS THAT HE WAS WORRYING AND NOT SURE WHETHER HE COULD MAKE NUMBER ONE LANDING BECAUSE THE PILOT OF NUMBER TWO AIRCRAFT IN SEQUENCE GAVE WARNING THAT THE NUMBER ONE AIRCRAFT AHEAD WAS ABOVE HIM AND COULD NOT DESCEND PASSING THROUGH HIS LEVEL. THE PILOT ADDED POWER AND RAISED THE GEAR AFTER STICK SHAKER ACTIVATED BUT DID NOT EXECUTE A RECOVERY BEFORE HITTING THE SEA.

4. SAFETY RECOMMENDATION

AIR TRAFFIC CONTROL RADAR SHOULD BE INSTALLED AT PHUKET AIRPORT.

ICAO Note.— Names of personnel were deleted. The attachments were not reproduced.

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